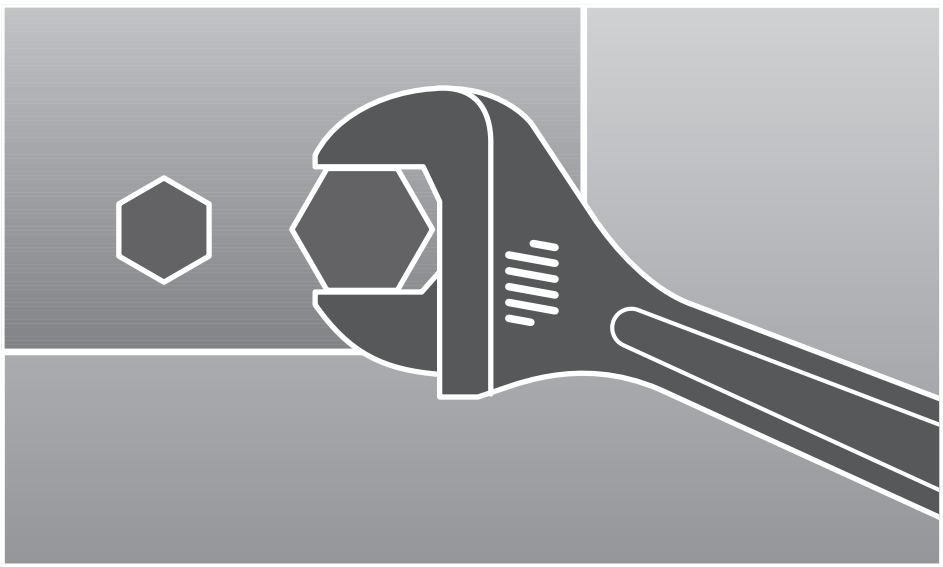
CH36BTA IM_E_23662 2005.12.19 9:35 AM Page 25

SAMSUNG

INSTALLATION MANUAL

CC18ETVX
CC24ETVX
CC36ETVX
CC42GTVX
CC48GTVX

System Air Conditioner (Cooling Only)



ⒺⒶ DB98-28263A(1)

Safety Precautions

The following safety precautions must be taken when using your air conditioner.

⚠ *WARNING* Risk of electric shock. • Can cause injury or death. • Disconnect all remote electric power supplies before servicing, installing or cleaning. • This must be done by the manufacturer or its service agent or a similar qualified person in order to avoid a hazard.

INSTALLING THE UNIT

- The unit should not be installed by the user. Ask the dealer or authorized company to install the units except room air conditioners for the U.S.A and Canada area.
- If the unit is installed improperly, water leakage, electric shock or fire may result.
- Mount with the lowest moving parts at least 2.5 m above the floor or grade level. (If applicable)
- The manufacturer does not assume responsibility for accidents or injury caused by an incorrectly installed air conditioner. If you are unsure about installation, contact an installation specialist.
- When installing the built-in type air conditioner, keep all electrical cables such as the power cable and the connection cord in pipe, ducts, cable channels e.t.c to protect them against liquids, outside impacts and so on.

POWER SUPPLY LINE, FUSE OR CIRCUIT BREAKER

- If the power cord of this air conditioner is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- The unit must be plugged into an independent circuit if applicable or connect the power cable to the auxiliary circuit breaker. An all pole disconnection from the power supply must be incorporated in the fixed wiring with a contact opening of >3mm.
- Do not use an extension cord with this product.
- If the unit is equipped with a power supply cord and a plug, the plug must be accessible after installation.
- The air conditioner must be installed in accordance with national wiring regulations and safety regulations wherever applicable.

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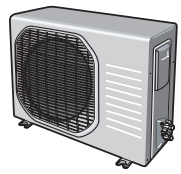
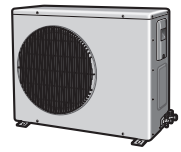
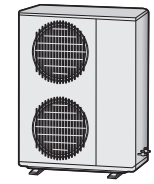
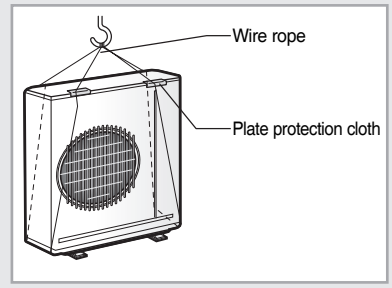
Type of outdoor unit	A	B	C	D
Design				
Model	CC18ETVX	CC24ETVX	CC36ETVX	CC42GTVX CC48GTVX

Preparation for outdoor unit installation

Moving the Outdoor Unit by Wire Rope

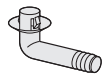
Fasten the outdoor unit by two 8m or longer wire ropes as shown at the figure. To prevent from damage or scratches, insert a piece of cloth between the outdoor unit and rope, then move the unit.



Air conditioner and accessories

The following accessories are supplied with the air conditioner.
The type and quantity may differ depending on the specifications.

◆ ***CC36ETVX, CC42GTVX/CC48GTVX***

Flare Nuts 3/8"	Cap Drain A	Ring Terminal	Rubber legs
Rubber Bracket Wire	Drain Plug 	Installation manual	

◆ ***CC24ETVX***

Flare Nuts 1/4"	Flare Nuts 5/8"	Rubber legs	Installation manual

◆ ***CC18ETVX***

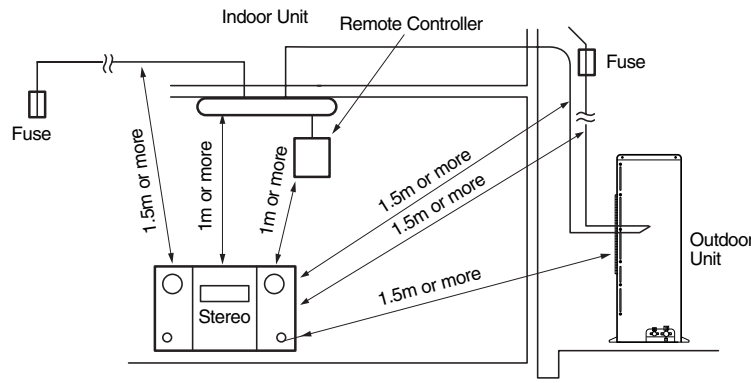
Rubber legs	Installation manual

Note ◆ Refrigeration pipes and their insulating materials, power cables are not supplied.

Deciding on where to install the outdoor unit

Outdoor Unit

- The outdoor unit must not be placed on its side or upside down, as the compressor lubrication oil will run into the cooling circuit and seriously damage the unit.
- Choose a location that is dry and sunny, but not exposed to direct sunlight or strong winds.
- Do not block any passageways or thoroughfares.
- Choose a location where the noise of the air conditioner when running and the discharged air do not disturb any neighbours.
- Choose a position that enables the pipes and cables to be easily connected to the indoor unit.
- Install the outdoor unit on a flat, stable surface that can support its weight and does not generate any unnecessary noise and vibration.
- Position the outdoor unit so that the air flow is directed towards the open area.
- Maintain sufficient clearance around the outdoor unit, especially from a radio, computer, stereo system, etc.



- If the outdoor unit is installed at a height, ensure that its base is firmly fixed in position.
- Make sure that the water dripping from the drain hose runs away correctly and safely.

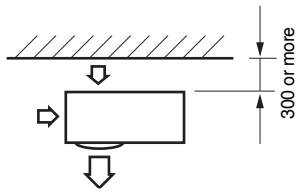
CAUTION

- ***You have just purchased a system air conditioner and it has been installed by your installation specialist.***
- ***This device must be installed according to the national electrical rules.***

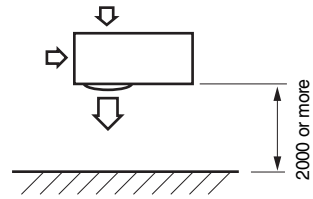
Space Requirements for Outdoor Unit

When installing 1 outdoor unit

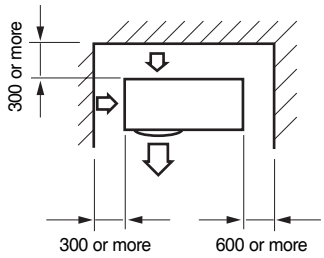
Unit : mm



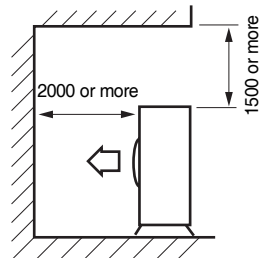
✻ When the air outlet is opposite the wall



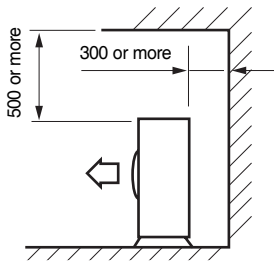
✻ When the air outlet is towards the wall



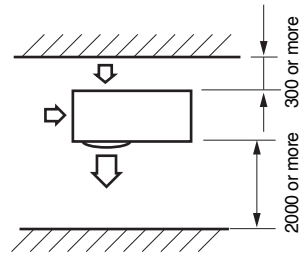
✻ When 3 sides of the outdoor unit are blocked by the wall



✻ The upper part of the outdoor unit and the air outlet is towards the wall



✻ The upper part of the outdoor unit and the air outlet is opposite the wall

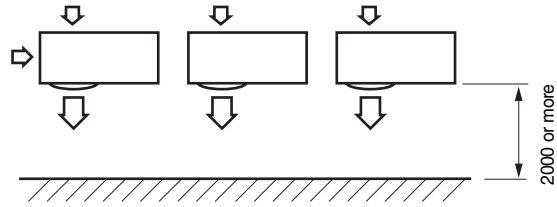


✻ When front and rear side of the outdoor unit is towards the wall

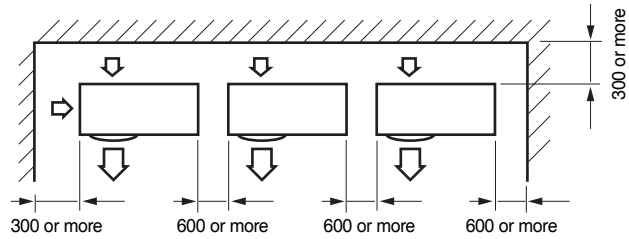
Deciding on where to install the outdoor unit (Continued)

When installing more than 1 outdoor unit

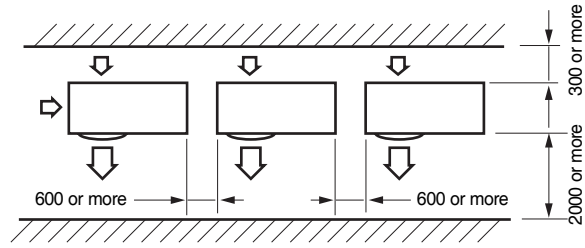
Unit : mm



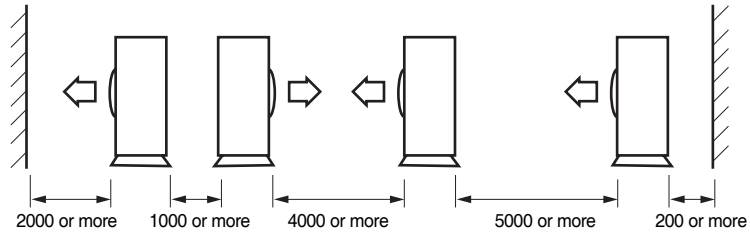
✻ When the air outlet is towards the wall



✻ When 3 sides of the outdoor unit are blocked by the wall



✻ When front and rear side of the outdoor unit is towards the wall



✻ When front and rear side of the outdoor unit is towards the wall

Outdoor unit installation

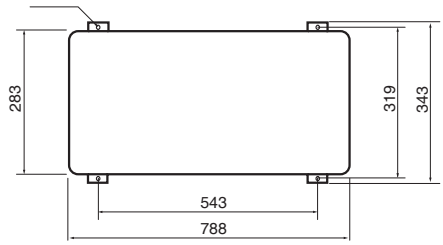
The outdoor unit must be installed on a rigid and stable base to avoid any increase in the noise level and vibration, particularly if the outdoor unit is to be installed in a location exposed to strong winds or at a height, the unit must be fixed to an appropriate support(wall or ground).

Fix the outdoor unit with anchor bolts.

Note ◆ The anchor bolt must be 20mm or higher from the base surface.

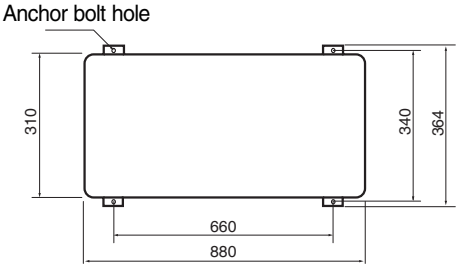
Unit : mm

Anchor bolt hole



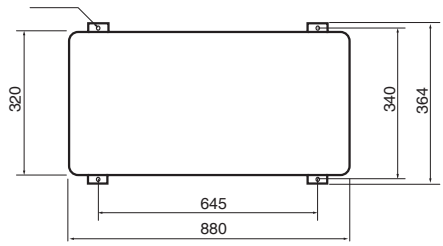
Type A

Anchor bolt hole



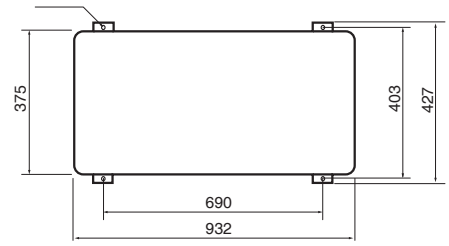
Type B

Anchor bolt hole



Type C

Anchor bolt hole

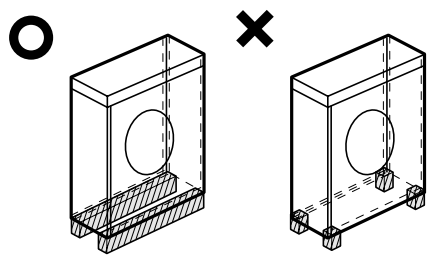


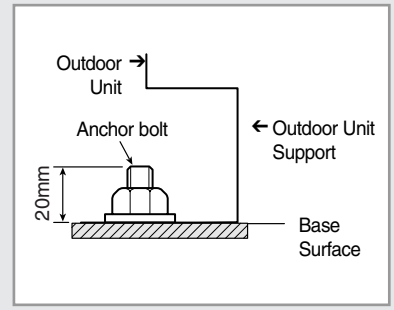
Type D

CAUTION

- ***Make a drain outlet around the base for outdoor unit drainage.***
- ***If the outdoor unit is installed on the roof, you have to check the ceiling strength and waterproof the unit.***

Outdoor Unit Support





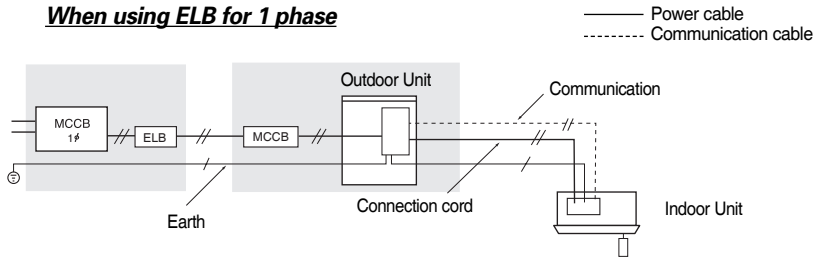
Connecting the cable

Two electronic cables must be connected to the outdoor unit.

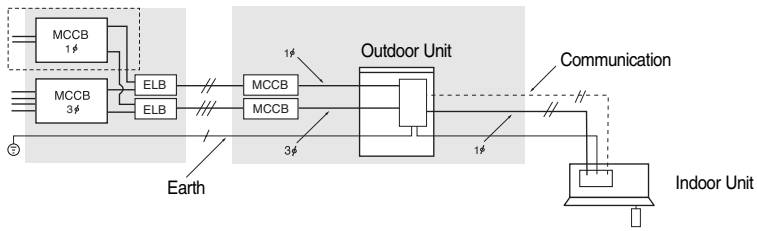
- The connection cord between indoor unit and outdoor unit.
- The power cable between outdoor unit and auxiliary circuit breaker.
- Specially for Russian and European market, before installation, the supply authority should be consulted to determine the supply system impedance to ensure compliance.

Example of Air Conditioner System

When using ELB for 1 phase



When using ELBs for 3 phase and 1 phase



✻ If an outdoor unit is installed in a place in danger of an electric leak or submergence, you must install the ELB.

Power Cable Specifications

Type of outdoor unit	Power Supply												Earth Cable
	3 Phase						Single Phase						
	Power Supply	Max/Min (V)	MCCB	ELB	Power Cable	Length	Power Supply	Max/Min (V)	MCCB	ELB	Power Cable	Length	
A	-	-	-	-	-	-	220-240V~ /50Hz	±10%	Frame: 30A Trip: 20A	20A	4.0mm², 2 Wires	20m or less	Ø1.6mm², 1 Wires
B	-	-	-	-	-	-	220-240V~ /50Hz	±10%	Frame: 35A Trip: 25A	25A	4.0mm², 2 Wires	20m or less	
C	-	-	-	-	-	-	220-240V~ /50Hz	±10%	Frame: 35A Trip: 30A	30A	6.0mm², 2 Wires	20m or less	
D	3Φ/ 380-415V~ /50Hz	±10%	Frame: 30A Trip: 20A	20A	4.0mm², 4 Wires	20m or less	-	-	-	-	-	-	

** The power cable is not supplied with air conditioner.*
** For power cable, use the grade H07RN-For H05RN-Fmaterials.*

Between Indoor and Outdoor Connection Cord Specifications

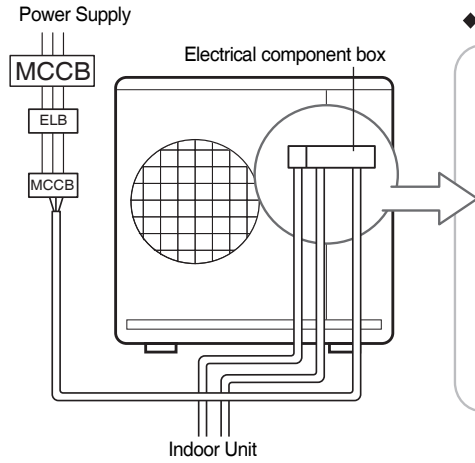
Power Supply		Max/Min(V)	Connection Wire	Earth Cable	Outdoor Comp & Fan Signal	Home server
Power Supply						
CC18/24/36ETVX	220-240V~/50Hz	±10%	2.5mm² 2 wires	Ø 1.6mm² 1 wire	2.5mm² 1 wires	0.75~ 1.25mm² 2 wires
CC42/48GTVX	3Φ/380-415V~ /50Hz					

** For connection cord, use the grade H07RN-F or H05RN-F materials.*

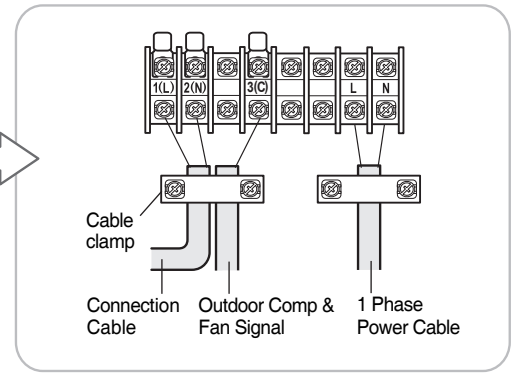
Connecting the cable (Continued)

Wiring Diagram of Power Cable

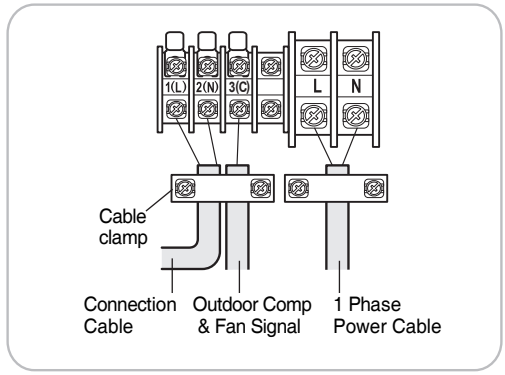
When using ELB for 1 phase



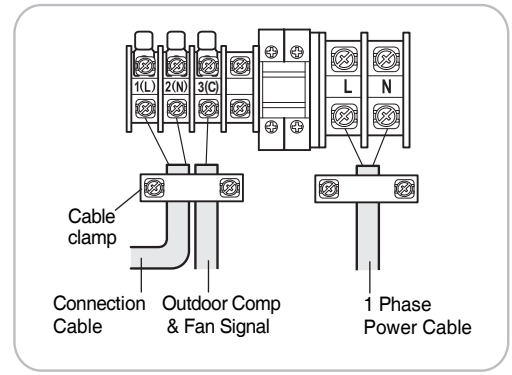
◆ ***CC18ETVX***



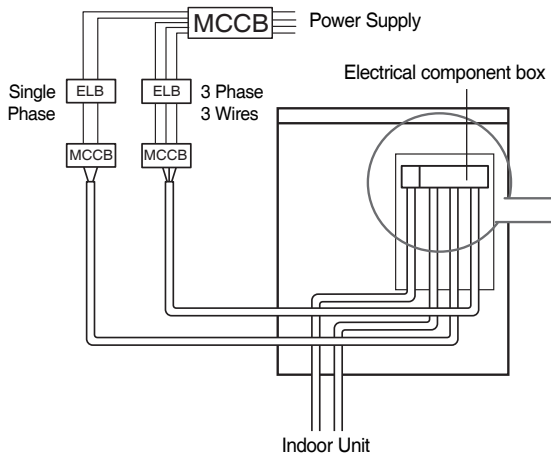
◆ ***CC24ETVX***



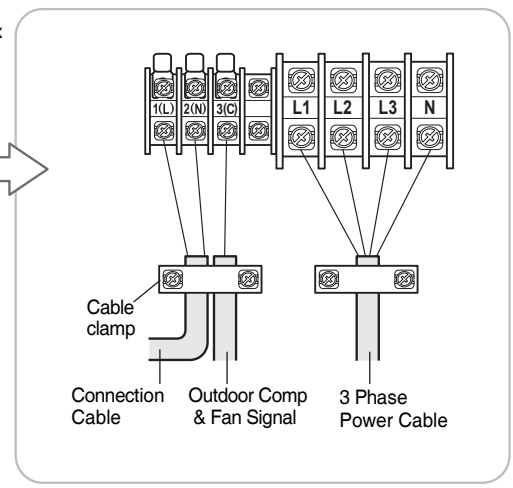
◆ ***CC36ETVX***



When using ELBs for 3 phase and 1 phase

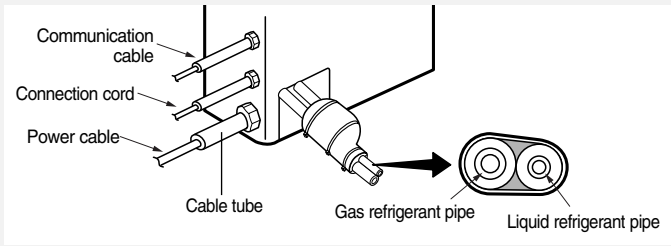


◆ ***CC42/48GTVX***



CAUTION

- ***You should connect the power cable into the power cable terminal and fasten it with a clamp.***
- ***The unbalanced power must be maintained within 2% of supply rating.***
  - If the power is unbalanced greatly, it may shorten the life of the condenser. If the unbalanced power is exceeded over 4% of supply rating, the indoor unit is protected, stopped and the error mode indicates.
- ***To protect the product from water and possible shock, you should keep the power cable and the connection cord of the indoor and outdoor units in the iron pipe.***
- ***Connect the power cable to the auxiliary circuit breaker. An all pole disconnection from the power supply must be incorporated in the fixed wiring(≥3mm).***
- ***When connecting cables, make the cable pass through the cable tube as shown at the figure.***

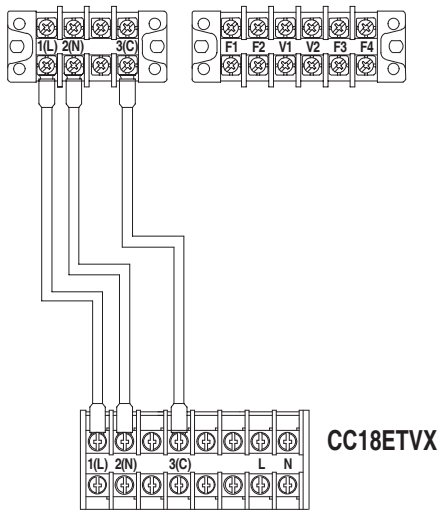


- ***Must keep the cable in a protection tube.***
- ***Keep distances of 50mm or more between power cable and communication cable.***

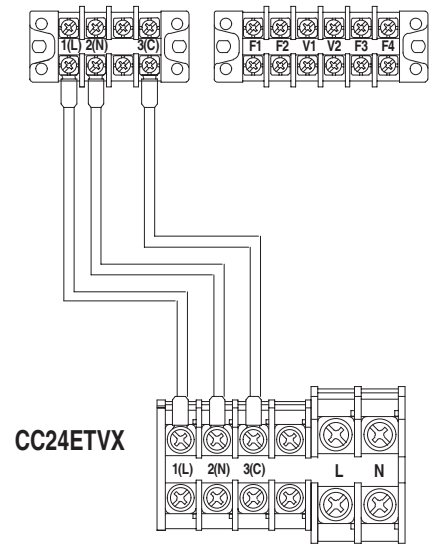
Connecting the cable (Continued)

Wiring Diagram of Connection Cord

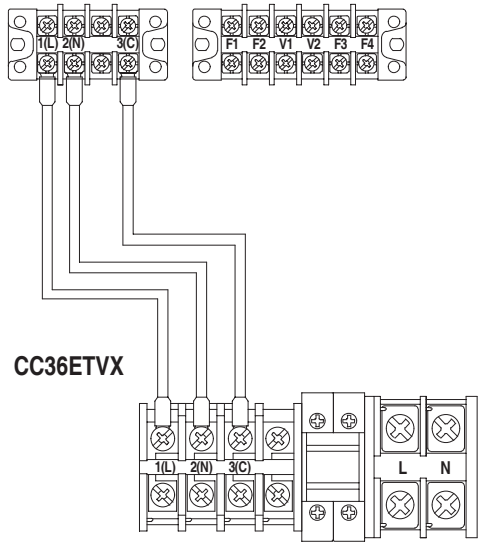
Indoor Unit (CC18ETVA)



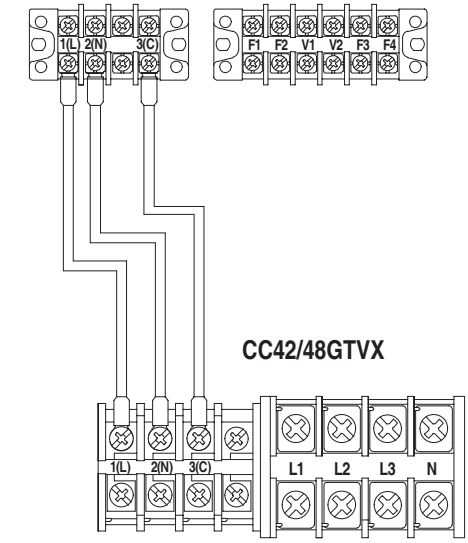
Indoor Unit (CC24ETVA)



Indoor Unit (CC36ETVA)

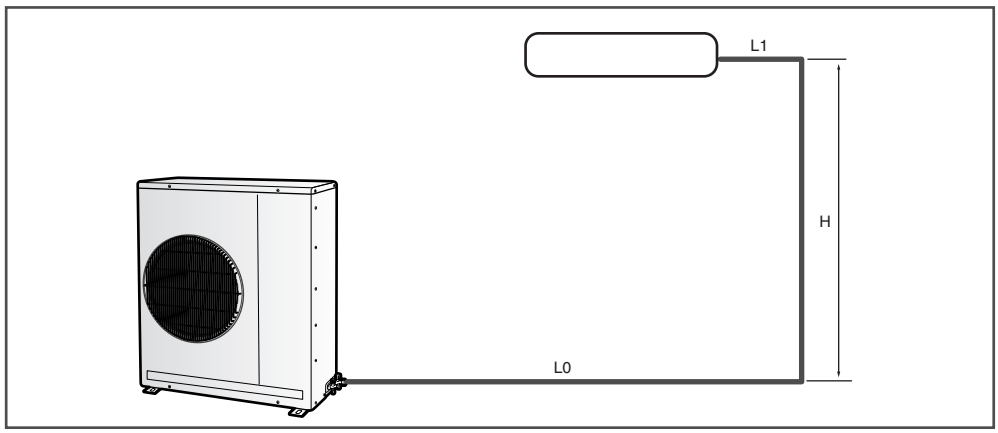


Indoor Unit (CC42/48GTVA)



Connecting the refrigerant pipe

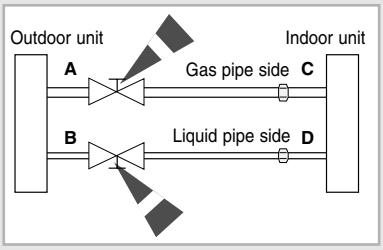
Refrigerant Piping System

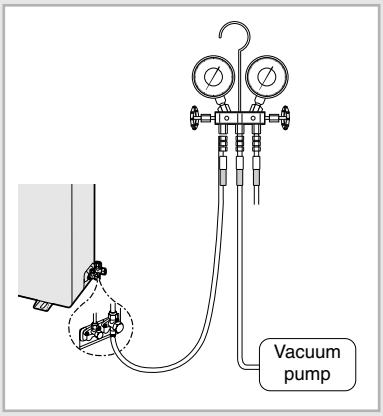


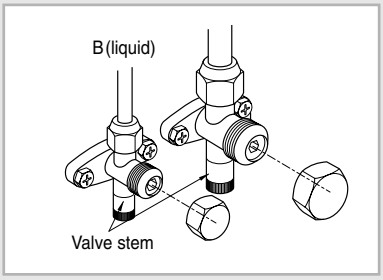
Refrigerant piping system table				Pipe length or height
Max. allowable length	Actual pipe length	L0+H+L1	CC18/24ETVX	30m or less
			CC36ETVX CC42/48GTVX	50m or less
Allowable height length	Actual pipe length	H	CC18/24ETVX	15m or less
			CC36ETVX CC42/48GTVX	30m or less

Connecting up and removing air in the circuit

The air in the indoor unit and in the pipe must be purged. If air remains in the refrigeration pipes, it will affect the compressor, reduce to cooling capacity and could lead to a malfunction. Refrigerant for air purging is not charged in the outdoor unit. Use Vacuum Pump as shown at the figure.







1 Connect each assembly pipe to the appropriate valve on the outdoor unit and tighten the flare nut.

2 Referring to the illustration opposite, tighten the flare nut on section B first manually and then with a torque wrench, applying the following torque.

Outer Diameter	Torque (kgf•cm)
6.35 mm (1/4")	140~170
9.52 mm (3/8")	250~280
12.70 mm (1/2")	380~420
15.88 mm (5/8")	440~480
19.05 mm (3/4")	990~1210
22.23 mm (7/8")	990~1210

3 Connect the charging hose of low pressure side of manifold gauge to the packed valve having a service port as shown at the figure.

4 Open the valve of the low pressure side of manifold gauge counterclockwise.

5 Purge the air from the system using vacuum pump for about 10 minutes.
- ◆ Close the valve of the low pressure side of manifold gauge clockwise.
- ◆ Make sure that pressure gauge show -0.1MPa(-76cmHg) after about 10 minutes.

This procedure is very important in order to avoid gas leak.
- ◆ Turn off the vacuum pump.
- ◆ Remove the hose of the low pressure side of manifold gauge.

6 Set valve cork of both liquid side and gas side of packed valve to the open position.

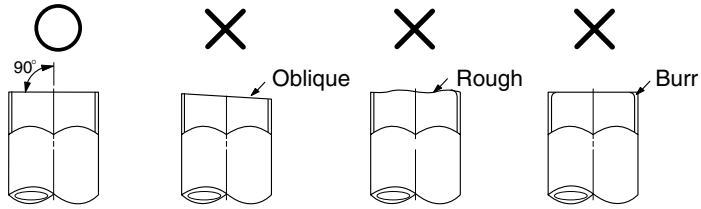
7 Mount the valve stem nuts and the service port cap to the valve, and tighten them at the torque of 183kgf•cm with a torque wrench.

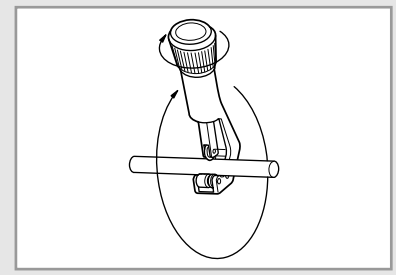
8 Check for gas leakage.
- ◆ At this time, especially check for gas leakage from the 3-way valve's stem nuts(A port), and from the service port cap.

Cutting / Flaring the pipes

1 Make sure that you have the required tools available (pipe cutter, reamer, flaring tool and pipe holder).

2 If you wish to shorten the pipes, cut it with a pipe cutter, taking care to ensure that the cut edge remains at a 90° angle with the side of the pipe. Refer to the illustrations below for examples of edges cut correctly and incorrectly.

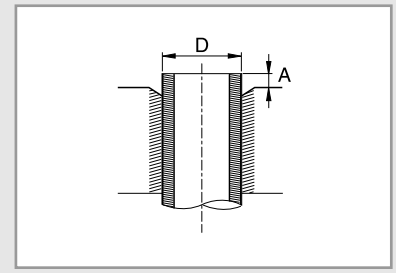




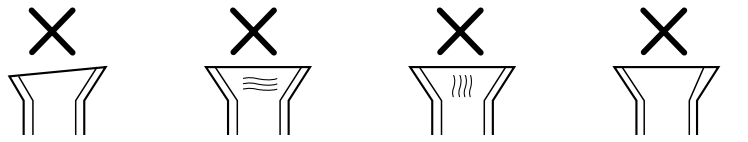
3 To prevent any gas from leaking out, remove all burrs at the cut edge of the pipe, using a reamer.

4 Slide a flare nut on to the pipe and modify the flare.

Outer Diameter(D)	Depth (A)
6.35 mm (1/4")	1.3mm
9.52 mm (3/8")	1.8mm
12.70 mm (1/2")	2.0mm
15.88 mm (5/8")	2.2mm
19.05 mm (3/4")	2.2mm
22.23 mm (7/8")	2.2mm

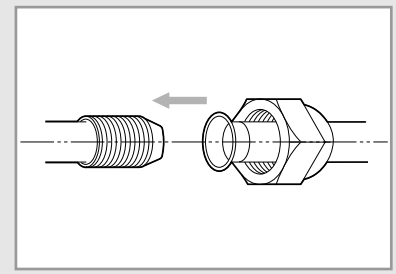


5 Check that the flaring is correct, referring to the illustrations below for examples of incorrect flaring.



6 Align the pipes and tighten the flare nuts first manually and then with a torque wrench, applying the following torque.

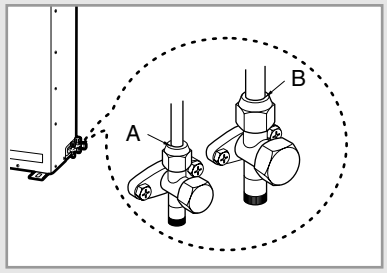
Outer Diameter	Torque (kgf•cm)
6.35 mm (1/4")	140~170
9.52 mm (3/8")	250~280
12.70 mm (1/2")	380~420
15.88 mm (5/8")	440~480
19.05 mm (3/4")	990~1210
22.23 mm (7/8")	990~1210



CAUTION

- ***In case of welding the pipe, you must weld with nitrogen gas blowing.***

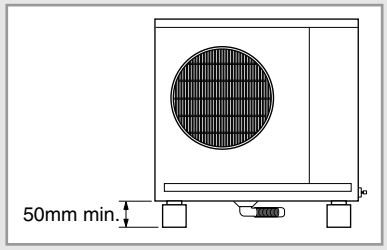
Performing leak tests

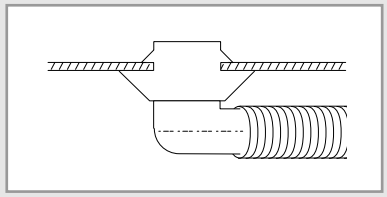


Before completing the installation (insulation of the hose and piping), you must check that there are no gas leaks.

To check for gas leaks on the...	Then, using a leak detector, check the...
Outdoor unit	Valves on sections A and B.

Connecting the drain hose to the outdoor unit





When using the air conditioner in the heating mode, ice may accumulate. During de-icing, the condensed water must be drained off safely. Consequently, you must install a drain hose on the outdoor unit, following the instructions below.

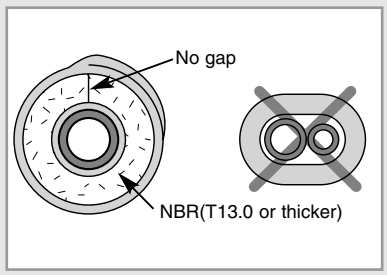
1 Make space more than 50mm between the bottom of the outdoor unit and the ground for installation of the drain hose, as shown in figure.

2 Insert the drain plug into the hole on the underside of the outdoor unit.

3 Connect the drain hose to the drain plug.

4 Ensure that the drained water runs off correctly and safely.

Insulation



Once you have checked that there are no leaks in the system, you can insulate the piping and hose.

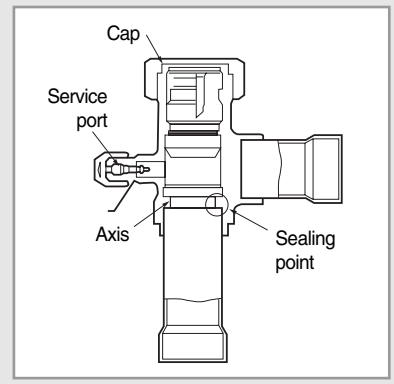
1 To avoid condensation problems, place an insulator around each refrigerant pipe.

Note

- When insulate the pipe, be sure to overlap the insulation.
- You have to use more than 120°C insulation (T13.0 or thicker Acrylonitrile Butadien Rubber) for the gas refrigerant pipe.

Using stop valve

To Open the Stop Valve



1 Open the cap and turn the stop valve counterclockwise by using a hexagonal wrench.

2 Turn it until the axis is stopped.

Note

- ◆ Do not apply excessive force to the stop valve and always use special instruments. Otherwise, the stopping box can be damaged and the back sheet can leaks.
- ◆ If the watertight sheet leaks, turn the axis back by half, tighten the stopping box, then check the leakage again. If there is no leakage any more, tighten the axis entirely.

3 Tighten the cap securely.

To Close the Stop Valve

1 Remove the cap.

2 Turn the stop valve clockwise by using a hexagonal wrench.

3 Tighten the axis until the valve reached the sealing point.

4 Tighten the cap securely.

CAUTION

- ◆ ***When you use the service port, always use a charging hose, too.***
- ◆ ***Check the leakage of refrigerant gas after tightening the cap.***
- ◆ ***Must use a spanner and wrench when you open/tighten the stop valve.***

Adding refrigerant

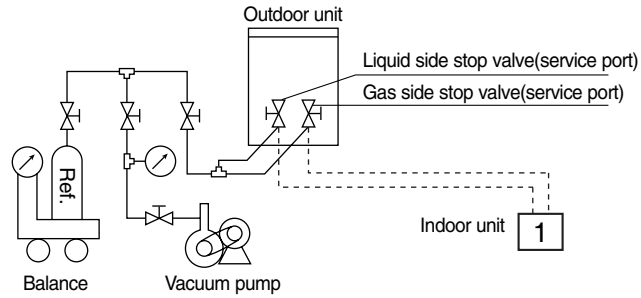
The outdoor unit is loaded with sufficient refrigerant for the standard piping. Thus, refrigerant must be added if the piping is lengthened. This operation can only be performed by a qualified refrigeration specialist. For quantity of adding refrigerant, refer to page 21.

1 Check that the stop valve is closed entirely.

2 Charge the refrigerant through the service port of liquid stop valve.

Note ◆ Do not charge the refrigerant through the gas side service port.

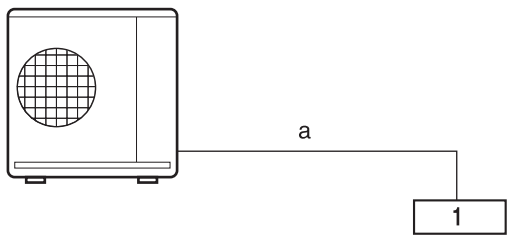
Note ◆ If necessary, refer to the pressure table classified by outdoor temperature.



How to Calculate the Quantity of Adding Refrigerant

If you have used more than 5m, add "Q" of refrigerant for extra meter. (For maximum piping length and height, refer to page 15)
The quantity of additional refrigerant is variable according to the installation situation. Thus, make sure the outdoor unit situation before adding refrigerant. This operation can only be performed by a qualified refrigeration specialist.

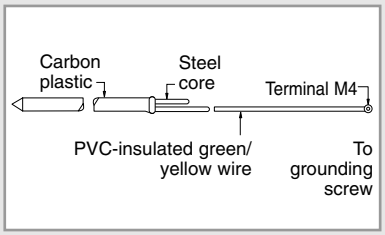
Model	"Q" (R22)
CC18ETVX	20g/m
CC24ETVX	35 g/m
CC36ETVX	30g/m
CC42GTVX	35g/m
CC48GTVX	30g/m

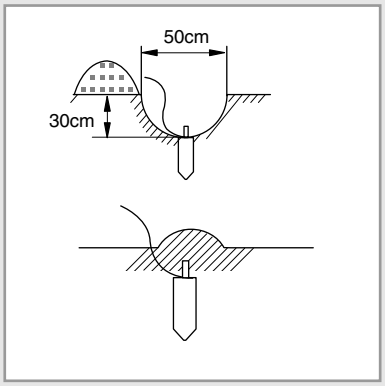


Model		Additional charging amount	
Indoor Unit	Outdoor Unit	Piping length 5.0m	Piping length 7.5m
CC18ETVA	CC18ETVX	-	50g
CC24ETVA	CC24ETVX	-	87.5g
CC36ETVA	CC36ETVX	-	75g
CC42GTVA	CC42GTVX	-	87.5g
CC48GTVA	CC48GTVX	-	75g

Checking correct grounding

If the power distribution circuit does not have an earth or the ground does not comply with specifications, an grounding electrode must be installed. The corresponding accessories are not supplied with the air conditioner.





1 Select an grounding electrode that complies with the specifications given in the illustration.

2 Determine a suitable location for the grounding electrode:
- ◆ In damp hard soil rather than loose sandy or gravel soil that has a higher grounding resistance
- ◆ Away from underground structures or facilities, such as gas pipes, water pipes, telephone lines and underground cables
- ◆ At least two metres away from a lightening conductor grounding electrode and its cable

Note ◆ The grounding wire for the telephone line cannot be used to ground the air conditioner.

3 Finish wrapping insulating tape around the rest of the pipes leading to the outdoor unit.

4 Install a green/yellow coloured grounding wire:
- ◆ If the grounding wire is too short, connect an extension lead, in a mechanical way and wrapping it with insulating tape (do not bury the connection)
- ◆ Secure the grounding wire in position with staples

Note ◆ If the grounding electrode is installed in an area of heavy traffic, its wire must be connected securely.

5 Carefully check the installation, by measuring the grounding resistance with a ground resistance tester. If the resistance is above required level, drive the electrode deeper into the ground or increase the number of grounding electrodes.

6 Connect the grounding wire to the electrical component box inside of the outdoor unit.

Testing operations

1 Check the power supply between the outdoor unit and the auxiliary circuit breaker.

- ◆ Single phase power supply: L, N
- ◆ Three phase power supply: L1, L2, L3, N

2 Check the indoor unit.

2-1 Check that you have connected the power and communication cables correctly. (If the power cable and communication cables one mixed up or connected incorrectly, the PCB will be damaged.)

2-2 Check the thermistor sensor, drain pump/hose, and display are connected correctly.

3 Connect the outdoor unit to your computer where the provided software is installed, then supply power to the outdoor unit.

Optional parts list

Wired Remote Controller Accessories

Wired remote controller	Cable-tie	Cable clamp	M4x16 tapped screw	Indoor unit power drawing cable
1	2	5	7	1

Communication cable of the wired remote controller	Wire joint	Owner's instructions	Installation manual
1	1	1	1

Centralized Controller Accessories

Centralized controller	Cable-tie	Cable clamp	M4x16 tapped screw	Owner's instructions	Installation manual
1	2	5	7	1	1

Function Controller Accessories

Function controller	Cable-tie	Cable clamp	M4x16 tapped screw	Owner's instructions	Installation manual
1	2	6	7	1	1

Wireless Remote Controller Accessories

Wireless remote controller	Battery	Remote control holder	STS 2S-2x10 tapped screw	Owner's instructions	Installation manual
1	2	1	2	1	1

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